

REMARKS

Claims 1-24 are all the claims pending in the application. After entry of the Amendment, claims 1-24 are canceled and new claims 25-48 are added.

New claim 25 corresponds to original claim 1. Additional support can be found in the original specification for new claim 25 at page 6, lines 6-7, page 7, line 36, and Figures 1-3.

New claim 26 also corresponds to original claim 1. Additional support can be found in the original specification for new claim 26 at page 5, second paragraph, and Figures 1-2.

New claim 27 corresponds to original claim 14. Additional support can be found in the original specification for new claim 27 at page 8, lines 1-5, and Figures 8-12.

New claim 28 corresponds to original claim 1. Additional support can be found in the original specification for new claim 28 at Figure 3.

New claim 29 corresponds to original claim 12.

New claim 30 corresponds to original claim 2.

New claim 31 corresponds to original claim 3.

New claim 32 corresponds to original claim 16.

New claim 33 corresponds to original claim 17.

New claim 34 corresponds to original claim 5.

New claim 35 corresponds to original claim 6.

New claim 36 corresponds to original claim 4.

New claim 37 corresponds to original claim 15.

New claim 38 corresponds to original claim 7.

New claim 39 corresponds to original claim 18.

New claim 40 corresponds to original claim 19.

New claim 41 corresponds to original claims 10 and 20. Additional support can be found in Figures 3 and 5.

New claim 42 corresponds to original claims 11 and 21. Additional support can be found in Figures 3 and 6.

New claim 43 also corresponds to original claim 21. Additional support can be found in Figure 12.

New claim 44 corresponds to original claims 1, 10, and 20. Additional support can be found in Figures 8, 11, and 12.

New claim 45 corresponds to original claim 22. Additional support can be found at Figure 8.

New claim 46 is supported by Figures 1, 2, 5, 6, and 7.

New claim 47 corresponds to original claim 23.

New claim 48 corresponds to original claim 24.

I. Specification

The Examiner objects to the spacing of the lines in the specification because it is single-spaced rather than double-spaced.

A substitute specification which is in compliance with the Examiner's requirement is submitted herewith. No new matter has been added to the substitute specification.

II. Drawings

The Examiner objects to the Drawings as not showing several features of the claimed invention. Particularly, the Examiner contends that the Drawings should show "the space in the range defined by a combination of a reference space and a focal depth of the lens, the reference space being defined by a length at which the stimulated emission emitting from the

stimulable phosphor layer focuses on the stimulated emission receiving plane after passing through the transparent substrate and the lens.”

Applicants have amended the claims, rendering the objection moot. Particularly, the new claims do not refer to the above-mentioned space. Applicants assert that the Drawings show all features of the claimed invention, and accordingly, respectfully request that this objection be withdrawn.

III. Claim Objections

The Examiner objects to the claims because they appear to be single spaced and because indentations should be used to set out the particular elements of the claims.

Applicants have submitted a substitute specification in compliance with the Examiner’s requirement. Further, in response to the Examiner’s comment regarding the narrative form of claims 1-24, Applicants submit new claims 25-48 which are not written in narrative form.

IV. Claim Rejections Under 35 U.S.C. § 112

(A) Claims 1-24 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the Examiner states that the claims are indefinite since the “reference space” and the “focal depth” are not clearly identified, and the range of distance between the light applied area of the phosphor sheet and the stimulated emission receiving plane is unclear. The Examiner also states that the specification does not describe the desired degree of focus.

Applicants have submitted new claim 25-48 which do not recite a “reference space” and more clearly describe the relationship between the light applied area of the phosphor

sheet and the stimulated emission receiving plane. However, Applicants respectfully traverse the Examiner's rejections that the focal depth is not adequately defined in the specification and the specification does not describe the desired degree of focus. First, the "focal depth" is described in the original specification at pages 16 and 17, as well as in Figures 8(2), 9(1), and 9(2). Second, with regard to the Examiner's comment that the specification does not describe the desired degree of focus, Applicants assert that the desired degree of focus is dependent upon the application of the imaging method in each circumstance, and on the purpose for which each image will be used. One skilled in the art would be capable of selecting a desired degree of focus for a particular image. Nevertheless, Table 1, at page 16 of the specification, provides guidance for selecting the desired degree of focus, as Table 1 describes different degrees of focus (described in connection with MTF) in relation to surface irregularities, where a focal depth of 300 μm was used. Applicants assert that claims 25-48 are not indefinite, and accordingly, Applicants respectfully request that this rejection be withdrawn.

(B) The Examiner contends that the term "irregularity" in claim 24 is indefinite because it is a relative term.

Applicants assume that this rejection was intended for original claim 22, since original claim 24 does not use the term "irregularity." Applicants respectfully traverse the Examiner's rejection. Applicants assert that the specification adequately describes the surface irregularities relevant to the instant invention; for example, see the original specification at page 4, 1st paragraph, Figures 8(2), 9(1), and 9(2) and Table 1. In addition, Applicants assert that it is not necessary for one using the instant invention to predetermine the amount of surface irregularity of the phosphor layer, since the instant invention automatically corrects for the surface irregularities.

Applicants assert that new claims 25-48 are not indefinite, and accordingly, Applicants respectfully request that this rejection be withdrawn.

V. Claim Rejections Under 35 U.S.C. § 103

Claims 1, 5-9, 12 and 16-19 are rejected under 35 U.S.C. § 103(a) as being obvious over Struye et al. (U.S. Patent 6,495,850) in view of Mueller et al. (U.S. Patent 6,373,074).

(A) Regarding claim 1, the Examiner contends that Struye discloses an apparatus and method for reading a latent radiation image from a phosphor layer, and Mueller shows that the distances between the elements are such that the emission light is focused on the receiving elements. Furthermore, the Examiner contends that the distances between elements are well known result effective variables affecting the degree of focus, and therefore their determination requires only routine skill in the art.

Applicants submit new claims 25-48 that clearly recite the invention. Applicants assert that the invention does not simply determine a desired distance for focusing the emission light onto the sensing elements, but the invention is designed to maintain a desired degree of focus during the reading process, despite irregularities in the surface of the phosphor layer that normally impair image quality. Applicants assert that both Struye and Mueller are completely silent with respect to controlling the movement of the storage panel and/or the reading means to keep variation (or fluctuation) in the distance between the storage panel and the light collecting lens within a small range, such as a focal depth of the collecting lens. In fact, the reader head of Mueller moves on guide bars arranged independent of the phosphor layer surface (see Mueller, Figure 7). Therefore, Applicants assert that neither

Struye nor Mueller, alone or in combination, disclose all of the limitations of the claimed invention. Accordingly, applicants respectfully request that this rejection be withdrawn.

(B) Regarding claims 5-8, the Examiner contends that the limitations of these claims do not suggest steps applicable to the claimed method, and furthermore that the limitations are mere routine design choices.

Applicants have redrafted the claims to distinctly set forth the invention. Applicants assert that new claim 25 is not obvious over Struye in view of Mueller as described above, and further that original claims 5-8, now new claims 34, 35, 38, and 39, are applicable to the structure to which stimulating light is applied. Applicants therefore assert that new claims 34, 35, 38 and 39 are not obvious over Struye in view of Mueller, and accordingly, Applicants request that this rejection be withdrawn.

(C) Regarding claim 9, the Examiner contends that Struye and Mueller suggest a method where the light applying unit and the collecting unit are on the same side, and further that such is a routine design choice.

Applicants assert that new claim 25 is not obvious over Struye in view of Mueller as described above, and therefore original claim 9, now new claim 40 (dependent from claim 25), is likewise unobvious. Applicants respectfully request that this rejection be withdrawn.

(D) Regarding claim 12, the Examiner contends that Struye and Mueller suggest an embodiment where the emission light passes through the lens but not the substrate.

Applicants have redrafted original claim 12 as dependent claim 29. Applicants assert that new independent claim 25 is not obvious over Struye in view of Mueller as described

above, and therefore, new claim 29 (dependent from claims 25 and 26) is also unobvious.

Accordingly, Applicants respectfully request that this rejection be withdrawn.

(E) Regarding claims 16-18, the Examiner contends that the claims do not further limit any step of the claimed method.

Applicants assert, as above, that new claim 29 is not obvious over Struye and Mueller, and therefore that new claims 32, 33, and 39 (corresponding to original claims 16-18) are likewise unobvious. Applicants respectfully request that this rejection be withdrawn.

(F) Regarding claim 19, the Examiner contends that Struye and Mueller suggest a method where the light applying unit and the collecting unit are on the same side, and further that the such is a routine design choice.

Applicants assert that new claim 25 is not obvious over Struye in view of Mueller, as described above, and accordingly original claim 19, now claim 40 (dependent from claim 25), is also unobvious. Applicants respectfully request withdrawal of this rejection.

Claims 2-4, 10-11, 13-15 and 20-21 are rejected as obvious under 35 U.S.C. § 103(a) over Struye and Mueller, and further in view of Kano *et al.* (U.S. Patent 5,012,107).

(A) Regarding claims 2-3 and 13-14, the Examiner contends that Struye and Mueller suggest a method by which a phosphor sheet is supported at the edges to allow for scanning, and contends that embodiments where the sheet is moved relative to the collecting unit, and vice versa, are known functional equivalents. The Examiner further contends that Kano discloses a phosphor sheet with reference planes.

Applicants respectfully traverse the Examiner's rejection because neither Struye, Mueller, or Kano teach the limitation where the phosphor sheet or the collecting unit is supported by a reference plane such that the distance between the phosphor layer and the stimulated emission-receiving plane is maintained. Since neither Struye, Mueller, or Kano, alone or in combination, disclose such a limitation, dependent claims 2-3 and 13-14 (now new claims 30, 31, 26, and 27 respectively) are not obvious. Accordingly, Applicants respectfully request that this rejection be withdrawn.

(B) Regarding claims 4 and 15, the Examiner contends that claims 4 and 15 do not further distinguish the invention.

Applicants assert that new claims 25 and 29 are not obvious as described above, and therefore claims 4 and 15 (now new claims 36 and 37 dependent from claim 25) are also unobvious. Accordingly, applicants respectfully request that this rejection be withdrawn.

(C) Regarding claims 10 and 20, the Examiner contends that it is a matter of routine design choice to move the sheet relative to the collecting unit or vice versa.

Applicants have canceled claims 10 and 20 and added new claim 41. New claim 41 recites the limitation "such that a distance between the phosphor layer and the stimulated emission receiving plane varies only within the focal depth". Applicants assert that new claim 41 is not obvious over Mueller, Struye, and Kano, since none of these references disclose such a limitation. Accordingly, Applicants respectfully request that this rejection be withdrawn.

(D) Regarding claims 11 and 21, the Examiner contends that Struye, Mueller, and Kano also suggest a driving means for moving the reading means relative to the sheet and support means.

Applicants have canceled claims 11 and 21 and added new claims 42 and 43. New claims 42 and 43 recite the limitations “such that a distance between the phosphor layer and the stimulated emission receiving plane varies only within said focal depth” and “wherein the stimuable phosphor layer has frame members attached to a surface thereto, the frame members tracking irregularities of the stimuable phosphor layer” respectively. Applicants assert that none of the references disclose such limitations, and therefore, new claims 42 and 43 are not obvious over Struye and Mueller in view of Kano. Accordingly, Applicants respectfully request that this rejection be withdrawn.

Claims 22-24 are rejected under 35 U.S.C. § 103(a) as being obvious over Struye, Mueller and Kano, and further in view of Kohda et al. (U.S. Patent 6,534,779).

(A) Regarding claim 22, the Examiner contends that claim 22 is obvious over Struye, Mueller, and Kano, as applied in the previous rejections, and further in light of Kohda, since Kohda describes a phosphor sheet with guide means attached for strengthening purposes. The Examiner further contends that it would have been obvious to one of skill in the art to have guide means that match the surface irregularities of the phosphor layer such that the guide means control the distance between the phosphor layer and the sensor.

Applicants respectfully traverse the rejection because no specific motivation to combine Kohda with Struye, Mueller, and Kano is provided. The Examiner contends that it

would be obvious to use a rigid substrate with a phosphor sheet, such as the “guide means” of Kohda, to control the distance between the light-applied area of the stimuable phosphor layer and the emission receiving plane. However, Applicants request that the Examiner explain how such is obvious by providing a specific suggestion to combine the references. Otherwise, Applicants respectfully request that this rejection be withdrawn.

Furthermore, Applicants assert that since Kohda only shows “guide means” attached to a support film, and not attached to a phosphor layer (see Kohda, Figures 6, 7, and 9), the “guide means” of Kohda cannot track surface irregularities of the phosphor layer. Therefore, since none of the references teach reference-plane forming means with surface irregularities that match those of the phosphor layer, Applicants request that the rejection of claim 22 (now claim 45) be withdrawn.

(B) Regarding claims 23 and 24, the Examiner contends that the limitations of these claims are described in Kano and Struye respectively.

Applicants assert that claims 45 and 46 are not obvious as described above, and further that claims 23 and 24, now new claims 48 and 49 (dependent from claims 45 and 46), are likewise unobvious. Accordingly, Applicants respectfully request that this rejection be withdrawn.

VI. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the

Amendment Under 37 C.F.R. § 1.111
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Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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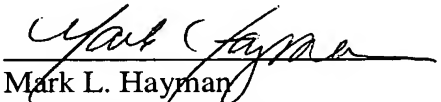
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